1024-20-124 **Scott T. Chapman*** (schapman@trinity.edu), Trinity University, Department of Mathematics, One Trinity Place, San Antonio, TX 78212-7200, **Paul Baginski**, University of California at Berkeley, Department of Mathematics, Berkeley, CA 94720, and **George Schaeffer**, Carnegie Mellon University, Department of Mathematical Sciences, Pittsburgh, PA 15213. *On the Δ-set of a singular arithmetical congruence monoid.* Preliminary report.

If a and b are positive integers with $a \leq b$ and $a^2 \equiv a \pmod{b}$, then the set

$$M_{a,b} = \{a + kb \mid k \in \mathbb{N} \text{ and } k \geq 0\} \cup \{1\}$$

is is a multiplicative monoid known as an arithmetical congruence monoid (or ACM). For $m \in M_{a,b}$, if $m = \prod_{i=1}^{t} x_i$ where each x_i is an irreducible of $M_{a,b}$, then t is called a *factorization length* of m. We denote by $\mathcal{L}(m) = \{m_1, \ldots, m_k\}$ (where $m_i < m_{i+1}$ for each $1 \leq i < k$) the set of all possible factorization lengths of m. The Delta set of m is defined by $\Delta(m) = \{m_{i+1} - m_i \,|\, 1 \leq i < k\}$ and the Delta set of $M_{a,b}$ by $\Delta(M_{a,b}) = \cup_{m \in M_{a,b}} \Delta(m)$. We consider $\Delta(M)$ for $M_{a,b}$ when $\gcd(a,b) > 1$. This set is fully characterized when $a = b$ and when $\gcd(a,b) = p^{\alpha}$ for p a rational prime and $\alpha > 0$. (Received January 04, 2007)